

CLAIMS

WHAT IS CLAIMED IS:

1. An engine comprising:

a crankshaft, rotating about a crankshaft axis of the engine;

a power piston slidably received within a first cylinder and operatively connected to the crankshaft via first linkage system such that the power piston reciprocates through a power stroke and an exhaust stroke of a four stroke cycle during a single rotation of the crankshaft;

a compression piston slidably received within a second cylinder and operatively connected to the crankshaft via second linkage system, wherein the first and second linkage systems share no common mechanical link, and such that the compression piston reciprocates through an intake stroke and a compression stroke of the same four stroke cycle during the same revolution of the crankshaft;

wherein the power piston leads the compression piston by a phase shift angle that is substantially equal to or greater than zero degrees and less than 30 degrees.

2. The engine of claim 1 wherein the power piston leads the compression piston by a phase shift angle that is substantially equal to or greater than 5 degrees and is substantially equal to or less than 29 degrees.

3. An engine comprising:

a crankshaft, rotating about a crankshaft axis of the engine;

a power piston slidably received within a first cylinder and operatively connected to the crankshaft such that the power piston reciprocates through a power stroke and an exhaust stroke of a four stroke cycle during a single rotation of the crankshaft;

a compression piston slidably received within a second cylinder and operatively connected to the crankshaft such that the compression piston reciprocates through an intake stroke and a compression stroke of the same four stroke cycle during the same rotation of the crankshaft;

wherein the power piston leads the compression piston by a phase shift angle that is substantially equal to or greater than 20 degrees and less than 30 degrees.

4. The engine of claim 3 wherein the power piston leads the compression piston by a phase shift angle that is substantially equal to or greater than 20 degrees and is substantially equal to or less than 29 degrees.